WHAT IS CLAIMED IS:

1. A rear-projection screen, comprising at least a lenticular lens sheet and a Fresnel lens sheet,

wherein the lenticular lens sheet comprises, in a base material thereof made of a resin, light diffusing microparticles made of a resin having a refractive index different from a refractive index of the base material,

wherein the light diffusing microparticles satisfy Formula I-1 below:

Formula I-1: $0.5\ \mu m \leq \Delta N1 \times d1 \leq 0.9\ \mu m$

where $\Delta N1$ represents a difference between a refractive index of the light diffusing microparticles and a refractive index of the base material of the lenticular lens sheet, and d1 represents an average particle diameter of the light diffusing microparticles.

2. A rear-projection screen, comprising at least a light diffusing sheet, a lenticular lens sheet, and a Fresnel lens sheet,

wherein the light diffusing sheet comprises, in a base material thereof made of a resin, light diffusing microparticles made of a resin having a refractive index different from a refractive index of the base material,

wherein the light diffusing microparticles satisfy Formula I-2 below:

Formula I-2: $0.5\ \mu m \leq \Delta Np \times dp \leq 0.9\ \mu m$

where ΔNp represents a difference between a refractive index of the light diffusing microparticles and a refractive index of the base material of the light diffusing sheet, and dp represents an average particle diameter of the light diffusing microparticles.

3. The rear-projection screen according to claim 1 or 2, wherein a refractive index n1 and an Abbe constant $\nu 1$ of the material forming the light diffusing microparticles and a refractive index n2 and an Abbe constant $\nu 2$ of the base material in which the light diffusing microparticles are dispersed satisfy Formula I-3 below:

Formula I-3: $(n1-n2) \times (\nu 1-\nu 2) < 0$

4. The rear-projection screen according to claim 1, wherein:

the Fresnel lens sheet comprises, in a base material thereof made of a resin, light diffusing microparticles made of a resin having a refractive index different from a refractive index of the base material;

diffusion of light caused by the light diffusing microparticles contained in the Fresnel lens sheet is smaller than diffusion of light caused by the light diffusing microparticles contained in the lenticular lens sheet; and

the light diffusing microparticles contained in the Fresnel lens sheet satisfy Formula I-4 below:

Formula I-4: $0.1\ \mu m \leq \Delta Nf \times df \leq 0.3\ \mu m$

where ΔNf represents a difference between a refractive index of the light diffusing microparticles contained in the Fresnel lens sheet and a refractive index of the base material of the Fresnel lens sheet, and df represents an average particle diameter of the light diffusing microparticles contained in the Fresnel lens sheet.

5. The rear-projection screen according to claim 2, wherein:

the Fresnel lens sheet comprises, in a base material thereof made of a resin, light diffusing microparticles made of a resin having a refractive index different from a refractive index of the base material;

diffusion of light caused by the light diffusing microparticles contained in the Fresnel lens sheet is smaller than diffusion of light caused by the light diffusing microparticles contained in the lenticular lens sheet; and

the light diffusing microparticles contained in the Fresnel lens sheet satisfy Formula I-4 below:

Formula I-4: $0.1\ \mu m \leq \Delta Nf \times df \leq 0.3\ \mu m$

where ΔNf represents a difference between a refractive index of the light diffusing microparticles contained in the Fresnel lens sheet and a refractive index of the base material of the Fresnel lens sheet, and df represents an average particle diameter of the light diffusing microparticles contained in

the Fresnel lens sheet.

6. The rear-projection screen according to claim 1, wherein:

the lenticular lens sheet contains the light diffusing microparticles satisfying Formula I-1 as a main diffusing element, and further contains, as a sub diffusing element, light diffusing microparticles that are made of a resin having a refractive index different from that of the base material of the lenticular lens sheet and that satisfy Formula I-5 below:

Formula I-5: $0.1\ \mu m \leq \Delta Ns \times ds \leq 0.3\ \mu m$

where ΔNs represents a difference between a refractive index of the light diffusing microparticles serving as the sub diffusing element and a refractive index of the base material containing the same, and ds represents an average particle diameter of the light diffusing microparticles serving as the sub diffusing element.

7. The rear-projection screen according to claim 2, wherein

the light diffusing sheet contains the light diffusing microparticles satisfying Formula I-2 as a main diffusing element, and further contains, as a sub diffusing element, light diffusing microparticles that are made of a resin having a refractive index different from that of the base material of the light diffusing sheet and that satisfy Formula I-5 below:

Formula I-5: $0.1\ \mu m \leq \Delta Ns \times ds \leq 0.3\ \mu m$

where ΔNs represents a difference between a refractive index of the light diffusing microparticles serving as the sub diffusing element and a refractive index of the base material containing the same, and ds represents an average particle diameter of the light diffusing microparticles serving as the sub diffusing element.

8. The rear-projection screen according to claim 6 or 7, wherein

an average particle diameter dm and a mix proportion by volume Am of the light diffusing microparticles as the main diffusing element, a thickness tm of a layer of the base material containing the light diffusing microparticles as the main diffusing element, a difference ΔNm between a refractive index

of the light diffusing microparticles as the main diffusing element and a refractive index of the base material containing the light diffusing microparticles as the main diffusing element, an average particle diameter ds and a mix proportion by volume As of the light diffusing microparticles as the sub diffusing element, a thickness ts of a layer of the base material containing the light diffusing microparticles as the sub diffusing element, a difference ΔNs between a refractive index of the light diffusing microparticles as the sub diffusing element and a refractive index of the base material containing the light diffusing microparticles as the sub diffusing element are set so as to satisfy Formula I-6 below:

Formula I-6: $Am \times tm/dm \times \Delta Nm > As \times ts/ds \times \Delta Ns$

9. The rear-projection screen according to claim 1 or 2, wherein a lenticular lens array whose lengthwise direction is directed in a horizontal direction is provided on a light-projected-side surface of the Fresnel lens sheet.

10. A rear-projection screen, comprising a lenticular lens sheet and a Fresnel lens sheet,

wherein the lenticular lens sheet and the Fresnel lens sheet comprise, in base materials thereof made of resins, light diffusing microparticles made of resins having refractive indices different from those of the base materials, respectively;

wherein:

diffusion of light caused by the light diffusing microparticles contained in the Fresnel lens sheet is smaller than diffusion of light caused by the light diffusing microparticles contained in the lenticular lens sheet; and

the light diffusing microparticles contained in the Fresnel lens sheet satisfy Formula I-4 below:

Formula I-4: $0.1\ \mu m \leq \Delta Nf \times df \leq 0.3\ \mu m$

where ΔNf represents a difference between a refractive index of the light diffusing microparticles contained in the Fresnel lens sheet and a refractive index of the base material of the Fresnel lens sheet, and df represents an

average particle diameter of the light diffusing microparticles contained in the Fresnel lens sheet.

11. A rear-projection screen, comprising at least a light diffusing sheet, a lenticular lens sheet, and a Fresnel lens sheet,

wherein the light diffusing sheet and the Fresnel lens sheet comprise, in base materials thereof made of resins, light diffusing microparticles made of resins having refractive indices different from those of the base materials, respectively;

wherein:

diffusion of light caused by the light diffusing microparticles contained in the Fresnel lens sheet is smaller than diffusion of light caused by the light diffusing microparticles contained in the light diffusing sheet; and

the light diffusing microparticles contained in the Fresnel lens sheet satisfy Formula I-4 below:

Formula I-4: $0.1\ \mu m \leq \Delta Nf \times df \leq 0.3\ \mu m$

where ΔNf represents a difference between a refractive index of the light diffusing microparticles contained in the Fresnel lens sheet and a refractive index of the base material of the Fresnel lens sheet, and df represents an average particle diameter of the light diffusing microparticles contained in the Fresnel lens sheet.

12. A rear-projection display comprising a rear-projection screen according to any one of claims 1, 2, 10, and 11.

13. A rear-projection display comprising a spatial modulation element, and a rear-projection screen on whose surface on a light-projected side an image formed by the spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

wherein the rear-projection screen includes a first screen element for converting projected light from the spatial modulation element into substantially parallel light, and a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose lengthwise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t2 between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-2 below:

Formula II-1: $t1 \geq f1$

Formula II-2: $t2 \leq f1 \times Pg/Pl$

where f1 represents a distance between a valley of the lenticular lens array and the focal plane, Pg represents a pixel pitch on the screen, and P1 represents an array pitch of the lenticular lens array.

14. A rear-projection display comprising a spatial modulation element, and a rear-projection screen on whose surface on a light-projected side an image formed by the spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

wherein the rear-projection screen includes a first screen element for converting projected light from the spatial modulation element into substantially parallel light, and a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose length-wise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t2 between an image-observed-side

surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-3 below:

Formula II-1: $t1 \geq f1$

Formula II-3: $t2 \leq Pg/2/\tan(\gamma i)$

where f1 represents a distance between a valley of the lenticular lens array and the focal plane, Pg represents a pixel pitch on the screen, and γi represents an in-layer equivalent angle in the transparent layer that is obtained by converting an observation angle γ at which a luminance of 1/10 of that in a normal direction is obtained due to diffusion caused by the diffusing layer, and is expressed as Formula II-4 below:

Formula II-4: $\gamma i = \text{asin}(\sin(\gamma)/n)$

where n represents a refractive index n of the transparent layer.

15. The rear-projection display according to claim 13 or 14, wherein the first screen element is a Fresnel lens sheet made of a transparent material containing substantially no diffusing material.

16. The rear-projection display according to claim 13 or 14, wherein a light absorbing layer is provided on a light non-transmission portion in a vicinity of the focal plane of the lenticular lens array of the second screen element.

17. A rear-projection screen on whose surface on a light-projected side an image formed by a spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

the rear-projection screen comprising:

a first screen element for converting projected light from the spatial modulation element into substantially parallel light; and

a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose length-wise direction is directed in a vertical direction, a diffusing layer

provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t2 between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-5 below:

Formula II-1: $t1 \geq f1$

Formula II-5: $t2 \leq f1 \times P1 \times 0.7$

where:

f1 represents a distance between a valley of the lenticular lens array and the focal plane, and P1 represents an array pitch of the lenticular lens array; and

a unit of t1 is according to that of f1, and a unit of t2 is millimeters.

18. A rear-projection screen on whose surface on a light-projected side an image formed by a spatial modulation element is projected so that the image is observed from an image-observed side opposite to the light-projected side,

the rear-projection screen comprising:

a first screen element for converting projected light from the spatial modulation element into substantially parallel light; and

a second screen element for diffusing the substantially parallel light,

wherein the second screen element includes a lenticular lens array that is provided on the surface on the light-projected side and whose length-wise direction is directed in a vertical direction, a diffusing layer provided at the image-observed side of the lenticular lens array, and a transparent layer provided between the lenticular lens array and the diffusing layer,

wherein a distance t1 between a light-projected-side surface of the diffusing layer and a focal plane of the lenticular lens array satisfies Formula II-1 below, and a distance t2 between an image-observed-side surface of the diffusing layer and the focal plane of the lenticular lens array satisfies Formula II-6 below:

Formula II-1: $t1 \geq f1$

Formula II-6: $t2 \leq 0.35/\tan(\gamma i)$

where:

f1 represents a distance between a valley of the lenticular lens array and the focal plane, and γi represents an in-layer equivalent angle in the transparent layer that is obtained by converting an observation angle γ at which a luminance of 1/10 of that in a normal direction is obtained due to diffusion caused by the diffusing layer, and is expressed as Formula II-7 below:

Formula II-7: $\gamma i = \text{asin}(\sin(\gamma)/n)$

where:

n represents a refractive index n of the transparent layer; and
a unit of t1 is according to that of f1, and a unit of t2 is millimeters.

19. The rear-projection screen according to claim 17 or 18, wherein the first screen element is a Fresnel lens sheet made of a transparent material containing substantially no diffusing material.

20. The rear-projection screen according to claim 17 or 18, wherein a light absorbing layer is provided on a light non-transmission portion in a vicinity of the focal plane of the lenticular lens array of the second screen element.